DOCUMENT RESUME

ED 380 089 IR 017 010

AUTHOR Binns, Jane C.; Branch, Robert C.
TITLE Gender Stereotyped Computer Clip-Art Images as an Implicit Influence in Instructional Message Design.
PUB DATE [95]
NOTE 11p.; In: Imagery and Visual Literacy: Selected Readings from the Annual Conference of the International Visual Literacy Association (26th, Tempe, Arizona, October 12-16, 1994); see IR 016 977.
PUB TYPE Reports - Evaluative/Feasibility (142) -- Speeches/Conference Papers (150)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS Computer Graphics; Educational Media; Elementary Secondary Education; *Imagery; Instructional Design; Instructional Materials; *Sex Bias; *Sex Fairness; *Sex Stereotypes; *Visual Aids; Visual Learning
IDENTIFIERS *Clip Art

ABSTRACT

The purpose of this paper is to sensitize instructional message designers to the stereotypical signals which may be inherent in computer clip-art selections. A rationale is presented for the power of message design, and the differences between gender equality and gender equity are discussed. Several computer clip-art libraries were analyzed, and the consistent gender themes which emerged throughout these libraries are presented. The following recommendations are made for promoting diverse, equitable, and balanced applications of computer clip-art images for use in instructional messages: (1) use non-gendered images; (2) use non-gendered labels; (3) create your own images; (4) scan images from photographs or printed artwork; (5) advocate computer clip-art libraries which promote diversity through a broader variety of images portraying men and women; and (6) inform computer software companies about preferences. Positive role models as represented in images do make a difference in children's education. They provide the opportunity for all students to dream about whom they might become. Children should be given an opportunity to be exposed to equitable gender representations in instructional images. Three figures offer examples of clip-art gender portrayal. (Contains 19 references.) (MAS)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED 380 089

Gender Stereotyped Computer Clip-Art Images as an Implicit Influence in Instructional Message Design

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

☐ This document has been reproduced as received from the person or organization originating it.

☐ Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

Alice Walker

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

Jane C. Binns
Robert C. Branch

The prevalent use of computer-generated images for use in instructional messages has prompted software developers to produce electronic "clip-art" libraries of people, places and objects which can be copied and pasted into other computer-generated documents. The place images and object images available from contemporary electronic clip-art libraries represent a variety of instances, however, there is a lack of diversity represented among the available people images for these same clip-art libraries. Regarding gender, women and men are portrayed differently in clip-art libraries of graphic software packages. The array of pictorial options depicting women and men is typically unbalanced, and often connotes stereotypical perceptions. Men are predominantly shown in positions of authority and leadership, whereas women generally are shown in subordinate roles often serving or assisting others. Such limited portrayals of people and stereotypical gender characterizations increase the potential for misrepresentation and is likely to bias the final version of any document. The thesis here is that gender stereotyped computer clip-art images implicitly influence instructional message design.

The purpose here is to sensitize instructional message designers to the stereotypical signals which may be inherent in computer clip-art selections. Presented here are rationale about the power of message design, the differences between gender equality and gender equity, and recommendations for promoting diverse, equitable and balanced applications of computer clip-art images for use in instructional messages.

Message Design

Computer clip-art images are utilized most often to improve the design of messages. Message design is the intentional arrangement of elements to communicate an idea, thought or theme. Grabowski (1991) defines message design as planning for the manipulation of the physical form of the message. Message design encompasses principles of attention, perception and retention that direct specifications for the physical form of messages which are intended to communicate between a sender and a receiver (Seels & Richey, 1994). Fleming and Levie (1993) refer to instructional message design as "specifying the characteristics of appropriate instructional messages" (p. *x*). Message design as a domain of visual literacy is the intentional arrangement of *visual* elements to communicate an idea, thought or theme. Visual literacy refers to a group of vision competencies a human being can develop by seeing and at the same time integrating other sensory experiences. Visual literacy is based

IR017010

on the assumptions that:

1. interpreting visual images is idiosyncratic,
2. reading visual messages is a learned capability, and
3. through the use of visual competencies,

we can design messages which enhance the potential for learner achievement.

Instructional message design facilitates the learning of content. Content, as a body of knowledge, exists within an organized structure and for which the structure reflects the interrelationships among the facts, concepts, and principles that make up the content. Content structure is often formed through the use of visual elements. Grabowski and Pearson (1988) contend both content and form can influence student achievement separate and apart from another. People learn content, as well as the structure which interrelates the content, concurrently. A characteristic of message design is that designs should be specific to both the medium and the learning task (Fleming, 1987; Fleming & Levie, 1993). The contention here is that content structure as a message form also communicates personal perspectives and cultural norms. A review of people images that are commonly incorporated into instructional presentations imply stereotypical messages and often send mixed or unintended messages.

A review of instructional documents suggest that people who incorporate graphics into their work tend to do so irregularly, with varying quality, and rarely do so based on empirically supported principles of message design. According to Semrau and Boyer (1991), the integration of visuals in educational software has a greater impact on the learner than the use of words alone. Further, "incorporating graphics into one's screen design does not come easily for most educators who are not trained in art of design" (Semrau & Boyer, 1991, p. 25). Semrau and Boyer suggest software programs can be critiqued according to explicit visual criteria and cultural factors. Semrau and Boyer recommend the following criteria checklist which can be used to evaluate the effectiveness of screen designs:

1. Unity
2. Balance
3. Style
4. Repetition
5. Contrast
6. Composition
7. Multicultural Representation
8. Equality of Gender
9. Social Issues

Message design should be scrutinized based on cultural criteria as well as aesthetic criteria. Because different cultural groups perceive and decode visual materials in different ways (Heinich, Molenda & Russell, 1993), an understanding of message design criteria helps to better achieve instructional objectives and promotes quality learning experiences. Incorporating cultural diversity throughout instructional content has many benefits (Anti-Defamation League of B'nai B'rith, 1988; Banks, 1989; Branch, Brigham, Chang & Stout, 1991; Branch, Brigham, Chang & Scheel; 1992; Dees & Bullard, 1992; Knott, 1991). Diversity of visual presentation allows for an opportunity to appreciate the nuances of cultural groups relative to religion, family, traditions and ancestry, as well as the obvious differences commonly portrayed in mass media. However, before any attempt can be made

to incorporate culturally pluralistic perspectives into instructional message design, it is important to understand culture is a patterned way of thinking, feeling and reacting to the environment. Culture is transmitted mainly by symbols and actions; and that regardless of the subject, there is a personal commitment required to identify alternative perspectives based on different cultural orientations (Branch, Goodwin & Gualtieri, 1993). Successful message designs require personal commitment to facilitate maximum learner achievement.

Equality and Equity

The greater number of male images available in many clip-art libraries may communicate that which exists in society [that there are more men in positions of authority and power than women], but it also reinforces an implicit stereotype that men are superior to women. The content of male images may also communicate that which exists in society [that men are allowed to do a lot more than women], but that too implies a stereotype. Both the number of images and the kind of images in computer clip-art libraries representing women and men raise issues of equality and equity.

Equality tends to be defined in terms of balance; or being the same measure. Equality in computer clip-art images would mean providing the same number of images and similar content images of women and men. Regarding the equality of gender, Semrau and Boyer (1991) suggest the contributions of both women and men in all types of roles including professional, vocational, managerial, and executive roles need to be incorporated into the [message] design. Men are often depicted in significant leadership roles while women are typically depicted in supporting roles. Men are the medical doctors or the chief executive officers and women are the nurses or secretaries (Figure 1). While there may not be as many women in positions of authority or in jobs such as construction workers, or as many men in subordinate positions or in jobs such as telephone operators and secretaries, in reality they do exist. Images may portray what exists in society, however, they also reflect social constructions. Clip-art people images in graphic software packages often reflect more than socially constructed "normal" images. Images communicate who we are as well as who we can become. The power and implicit influence of stereotypical images can have a substantive impact on the perceptions of ourselves. Therefore, instructional designers are obligated to construct balanced messages from available resources. Clip-art libraries of people should provide images for which designers can identify and utilize to communicate comprehensive messages. Libraries with images of limited characterizations constrain one's ability to express or instruct, thereby creating an inherently inequitable situation.

Executiv - Corel

Telegirl - Corel

Figure 1. Men typically portrayed in position of authority while women are typically portrayed in a supporting position.

Equity is defined in terms of what is just and fair. It is *un*just when women are primarily portrayed as telephone operators or secretaries and when men are portrayed primarily as bosses or leaders. Images implicitly inform people of what one is "allowed" to do or be able to achieve. There should be explicit attempts to increase the number of computer clip-art images depicting female supervisors, technicians and managers. A lack of diverse and representative images inhibits one's ability to teach about changing roles and diminishes the possibility for the learner or viewer to accurately conceive available careers. Graphic software creators have a responsibility to present females and males in a variety of roles and present equal numbers of non-stereotypical images.

The origins of stereotype and their roles in society are beyond the scope of this presentation, however, a review of the denotations of stereotype is appropriate. Stereotype is defined by Webster as a metal printing plate cast from a mold made from set type; or an unvarying form or pattern. Such denotation is appropriate for the industrial age practice of setting immovable type, but such denotations are inappropriate for instructional message design. Webster also defines stereotype as a fixed or conventional notion such as of a person, group or idea which is held by a number of people, and allowing for no individuality or critical judgement. Fixed notions are also inappropriate relative to instructional message design.

Images do influence individual perception. Cash and Brown (1989) explored stereotypes and realities of gender and body images by comparing female and male perceptions of sex differences in body image to the actual differences between the sexes. Results indicated females and males alike perceived females to have more negative evaluations of their appearance, their fitness, their health, and were more dissatisfied with their bodies. The perception was that females were more appearance-oriented, more health-oriented, and more illness-oriented, but less fitness-oriented. Females were also believed to label their weight as heavier, experience more anxiety about becoming fat, and were more conscious of small weight changes. Females were also thought more likely than males to be on a weight-loss diet, and to report more frequent episodes of eating restraint. The perception of females among female and male participants in the Cash and Brown (1989) study was that negative evaluations existed on all 13 measures of the study, however, there were only eight actual negative evaluations for females and the habits they reported. The perceived negative evaluations on all thirteen measures as compared to the eight confirmed sex differences provides general support for stereotypical mis-perception of body-image attitudes toward gender.

Images in commercial media do teach us to some extent how to look, how to act, what to worry about and what to enjoy. Advertising implicates television and other media as powerful influences on the viewer. DeVaney (1994) purports "that the visual image is a ubiquitous teacher in this post modern age. Children are introduced to their world primarily through images, especially popular culture, images on television, in films and in advertisements" (p. 356). The discourse in print media such as that found in commercial advertising, which is occasionally utilized in classroom instruction, can also make inferences about what students ought to consider as important.

Similarly, images found in electronic media, such as computer assisted instruc-

tional materials, can implicitly offer unbalanced, mono-cultural portrayals of gender. Kilbourne (1990) conducted a study on male-female perceptions of leadership using the portrayal of women in advertising. The study's premise suggested that roles portrayed by a woman in an advertisement can provide information from which a viewer will determine conclusions about a woman and generalize key characteristics to other women. Kilbourne found that men perceived women to have greater managerial abilities when depicted in professional roles. Women did not perceive women professionals as having any more or less managerial abilities than women depicted in domestic roles such as housewife. The Kilbourne study supports the notion that non-stereotypical images can offset stereotypical perceptions. Another implication of the Kilbourne study is that the use of gender role stereotypes in advertising can have an adverse effect on a person's ability to accurately judge another's ability. Kilbourne also suggests that advertising does not engender stereotyping, but so long as stereotypical gender roles are portrayed in advertising and the media, they do contribute a significant influence to one's perception.

Gender Language in Computer Clip-Art Libraries

Gender stereotype images in clip-art libraries have been presented in relation to their implicit influence in instructional message design. Another discriminating factor in computer clip-art libraries is the language used to identify people images. Gender stereotyped language include: newsman, businessman and workman. Gender stereotyped career images include: nurse, secretary and stewardess. According to the American Psychological Association (1994), individuals should avoid ambiguity in [gender] identity or [gender] role by choosing nouns, pronouns, and adjectives that specifically describe people. "The use of *man* as a generic noun or as an ending for an occupational title (e.g., policeman) can be ambiguous and may imply incorrectly that all persons in the group are male" (American Psychological Association, 1994, p. 50).

Several computer clip-art libraries were analyzed including Corel Draw, Olduvai, Hypercard, Image Club, Storyboard Live!, Totem and Word Perfect. Consistent themes emerged throughout these libraries. Females were portrayed in less than half the number of images as males. The images of females working consisted primarily of sitting at a desk, speaking on the telephone, or posing, as in modeling. The images of males working consisted primarily of positions of authority or leadership such as a boss, executive or foreman. The images of women consisted primarily of positions of subordinates such as secretary or nurse.

Female images in more than a few instances were either labeled using sexist terminology such as "stewardess" or the labels were so vague, the viewer could not anticipate an image: "woman 1;" "woman 2." Terms like "stewardess" are problematic because culturally, "flight attendant" is the widely-used label for the person who serves you on an airplane (Figure 2). Labels such as "woman 1" or "woman 2" do not aid the viewer when searching for a particular kind of image. Male image labels in contrast were typically specific so that the viewer might anticipate the appearance of an image. The difference between female and male image labels effectively discourages the viewer or designer from using one kind of image and encourages another. The use of vague or stereotypical labels may also imply the importance of one image or gender over another.

Woman 01 - Storyboard Live!

Woman 02 - Storyboard Live!

ManFront - Storyboard Live!

ManAngle - Storyboard Live!

Figure 2. "Woman 1" / "Woman 2." Vague description of actual library images or nondescript label of actual image. In contrast, "Man Front" and Man Angle" provide better descriptive information.

BEST COPY AVAILABLE

Male_Sec - Image Club

Hostess - Corel

Phone195 - Corel

Figure 3. Examples of lack of variety and lack of non-stereotypical gender values in computer clip-art library images.

Corel Draw contained the greatest number and variety of people images. Male images in Corel Draw outnumbered female images by more than two-to-one. The male images also represented a wider variety of images. Working men were bosses, and executives but also construction workers, doctors, computer operators and technicians as well as architects. The female and male images in Storyboard Live! revealed messages regarding appearance and gender values. There are eight images of men and only three of women in the people library; the three female images are of a "secretary", "nurse" and "stewardess" (Figure 3).

Recommendations

An intentional effort should be made to present non-stereotypical images as more and more computers are used in instruction. Educational software containing graphics and clip-art libraries with images of people should portray female and male images for which all students can identify, and depict careers which all students can aspire. The following recommendations are offered as initial steps to promote accurate gender portrayals in instructional messages which incorporate images from computer clip-art libraries to facilitate learning.

Recommendation #1

Avoid gender stereotyped images. Use non-gendered images.

Recommendation #2

Avoid gender stereotyped labels by using non-gender stereotyped labels such as "construction worker," astronaut" and "news broadcaster." Relabel images so that terms are not gender-specific .

Recommendation #3

Create your own images. Computer clip-art packages such as Illustrator, Deluxe Paint, Microsoft Paintbrush, Photoshop for IBM, and Superpaint, and Pixel Paint for MacIntosh provide means for the designer to create her or his own images.

Recommendation # 4

Scan images from photographs or printed artwork.

Recommendation #5

Advocate computer clip-art libraries which promote diversity, equity and balance through a broader variety of images portraying women and men.

Recommendation #6

Inform computer software companies about your preferences.

In order to truly adopt a learner-centered approach to education, all students should be given the opportunity to dream about whom they might become. Positive role models as represented in images do make a difference. The scope of this examination explored gender differences and stereotypes as depicted among computer clip-art images. Other areas deserving exploration are computer clip-art images relative to nationality and culture.

References

American Psychological Association. (1994). *Publication manual of the American Psychological Association* (4th ed.). Washington, D.C.: American Psychological Association.

Anti-Defamation League of B'nai B'rith (1988). *A world of difference, teachers/study guide*.

Banks, J. A. (1989). Integrating the curriculum with ethnic content: approaches and guidelines. In J. A. Banks & C. A. McGee Banks

(Eds.), *Multicultural education: Issues and perspectives* (pp. 189-207). Boston: Allyn and Bacon.

Branch, R. C., Brigham, D. E., Chang, E., & Stout, P. (1991). Incorporating cultural diversity into instruction. *Community Education Journal, 18*(4), 20-30.

Branch, R. C., Brigham, D. E., Chang, E., & Scheel, N. (1992). Strategies for incorporating cultural pluralism into teaching from an instructional design perspective. *Community Education Journal, 19*(4), 20-30.

Branch, R. C., Goodwin, Y., & Gualtieri, J. (1993). Making classroom instruction culturally pluralistic. *The Educational Forum, 58*, 57-70.

Cash, T.F., & Brown, T.A. (1989). Gender and Body Images: Stereotypes and Realities. *Sex Roles*. 21(5/6), 361-373.

DeVaney, A. (1994). Ethical Considerations of Visuals in the Classroom: African-Americans and Hollywood Film. In D.M. Moore & F.M. Dwyer (Eds.), *Visual Literacy*. Englewood Cliffs, NJ: Educational Technology Publications.

Dees, M., & Bullard, S. (Eds.). (1992). *Teaching Tolerance, 1*(1).

Fleming, M. (1987). Research on pictures: A guide to the literature. In D. M. Willows & H. A. Houghton (Eds.), *The psychology of illustration: Basic research* (Vol. 1). New York: Springer-Verlag.

Fleming, M., & Levie, W. H. (Eds.). (1993). *Instructional message design: Principles form the behavioral and cognitive sciences* (2nd ed). Englewood Cliffs, NJ: Educational Technology Publications.

Grabowski, B. L. (1991). Message design: Issues and trends. In G. J. Anglin (Ed.), *Instructional technology: Past, present, and future*. Englewood, CO: Libraries Unlimited.

Grabowski, B., & Pearson, R. (1988). *The development of a research agenda and generic disc for computer-based interactive video*. Educational Resources Information Center Clearinghouse on Information and Technology. (ERIC Document Production Service No. ED 295 672)

Heinich, R., Molenda, M., & Russell, J. D. (1993). *Instructional media and the new technologies of instruction* (4th Ed.). NY: Macmillan Publishing Company.

Kilbourne, W.E. (1990). Female Stereotyping in Advertising: An Experiment on Male-Female Perceptions of Leadership. *Journalism Quarterly*. 67(1), 25-31.

Knott, E. S. (1991). Working with culturally diverse learners. *Journal of Developmental Education*, Winter, 14-18.

Morris, J. D. (1988). A review of literature on the effects of production techniques in instructional television. *International Journal of Instructional Media, 15*(1), 41-48.

Seels, B., & Richey, R. C. (1994). *Instructional technology: The definitions and domains of the field*. Washington, D.C.: Association for Educational Communications and Technology.

Semrau, P., & Boyer, B. A. (1991). Examining educational software from both aesthetic and cultural perspective. *Journal of Hypermedia and Multimedia Studies, 2*(1), 25-28.